

[Docket ID: FEMA-2021-0024]

Request for Information on the National Flood Insurance Program's Floodplain Management Standards for Land Management and Use, and an Assessment of the Program's Impact on Threatened and Endangered Species and Their Habitat

(2) Should FEMA update flood elevation requirements for SFHAs by setting higher freeboard levels? If so, what should FEMA consider for the higher elevation levels for freeboard?

The State of Ohio DOT believes that no increase to the required freeboard level should be made. It is our opinion that all communities should be able to assess their own level of acceptable risk. At present, these communities are permitted to raise the freeboard requirements and do so if they believe the extra costs will provide a benefit for them. All riverine locations produce different risks and a one size fits all is rarely the best solution. We also believe that setting a higher standard may be viewed as the new minimum standard by some communities and they may then increase their freeboard requirements over the new level established by FEMA.

(3) Should FEMA develop higher standards for these structures and facilities as defined in 44 CFR 9.4? If so, why? Should FEMA consider differences between certain structures and facilities, such as use, occupancy, operational size, or public and private operators in developing higher standards? Should FEMA consider differences such as use, occupancy, operational size, or public and private operators in developing higher standards for structures and facilities performing critical actions?

Along the same lines as noted in our response to question 2, the State of Ohio DOT believes that no change to the required freeboard should be made. It is our opinion that all communities should be able to assess their own level of acceptable risk for all structure types regardless of use. At present, these communities are permitted to raise the freeboard requirements and do so if they believe that creates a benefit for them. We question how changes would impact highways in close proximity to these facilities. Highways could be subject to varying requirements if adjacent structures and facilities are treated differently. We are concerned how multiple standards would be applied near highways.

(4) Should FEMA expand the SFHA generally from the 1 percent annual chance flood to a 0.2 percent or a 0.1 percent area, and what decision rule should FEMA use to choose the appropriate area? Should the SFHA be expanded from a certain percent annual chance area to the flood of record (or whichever is higher)? Similarly, what standards or restrictions should be considered for high risk flood areas that are within the SFHA (e.g., flash flood, mudslide, erosion prone, high velocity)? Alternatively, should FEMA be aware of and/or use a different metric to identify flood risk?

The 1 percent annual chance flood has been the standard criteria for defining the SFHA since the inception of the NFIP. The 0.2 percent annual chance flood is often shown on FIRM panels adjacent to the Zone AE and provides communities with information to base development beyond the traditional 1 percent boundary. As noted in previous comments we feel the communities should be able to decide their own risk levels beyond the current standard. If expansion of the SFHA from the current base flood is pursued, it should only be considered provided the Local community has authority over the proposed area and if funding is made available from FEMA to perform the appropriate hydraulic study and subsequent mapping. An unfunded mandate from FEMA is

generally not desired by Local authorities. We also question the ability to confidently estimate the 0.2 percent annual chance flood flows to develop the SFHA.

(7) How could one or more of the following specific changes to the NFIP minimum floodplain management standards benefit T&E species and their habitats while furthering the goal of improving resilience to flooding? What would the potential impact be on the NFIP participating communities?:

- (a) Limiting construction in any identified riparian buffer zone;**
- (b) Requiring compensatory storage to have no net increase in projected flooding levels for all development in the SFHA;**
- (c) Requiring a more restrictive regulatory floodway standard;**
- (d) Requiring compensatory conservation credits/areas for all development in portions of the SFHA that provide natural and beneficial functions;**
- (e) Requiring low impact development standards and/or permeable surfaces that may benefit T&E species and habitat; and/or**
- (f) Prohibiting or limiting construction in any portion of the SFHA. How should the suggested changes listed above be prioritized to best benefit T&E species while also furthering the goals of the NFIP? Are there additional changes that should be considered and if so, what are they and what is their prioritization in comparison to the changes listed?**

Incorporating standards that limit construction in riparian and SFHAs, create a more restrictive floodway, and requiring compensatory storage may create significant regulatory and financial burdens for DOTs. Additional requirements for specific T&E species may also create a patchwork of complex regulations to further complicate floodplain permitting.

(10) Are there any NFIP minimum floodplain management standards that currently cause hardship, conflict, confusion or create an economic or financial burden? If so, what are they and how can they be modified to reduce the burdens while still meeting the objectives of mitigating flood loss and reducing risk? Are there specific types of development or uses that should be considered for exemption from NFIP minimum floodplain management standards or should different standards apply? If so, what are they, why should specific types of development or uses be considered for exemption, and what different standards should be applicable?

The State of Ohio DOT requests the definition of the No-Rise condition to be set at a realistic value given the high standard of error in hydrology predictions. It's noted that the cross sections shown in the FIS studies is shown to the nearest tenth of a foot (0.1). This precision is more realistic than the nearest hundredth of a foot (0.00) which is currently required when checking for the allowable water surface rise. See comment 14, bullet point Cii, "Engineering Hydraulic Modelling Analysis Precision".

In addition to the definition of the No-Rise condition, additional benefit would be gained by having transportation facilities exempt from the regulations when minor bridge repairs, such as pier encasements, slope armoring, or deck replacements, are performed on a structure. Minor modifications or improvements to structures within the floodway often lead to a localized increase of sub tenth of a foot water in the surface elevation at the bridge. The local effects do not impact properties or the FIRM boundaries. Although this is the case, the CLOMR/LOMR process must be followed, which leads to time delays and increased cost to the project for taxpayers.

(12) The United States is experiencing increased flooding and flood risk from climate change. Climate change may exacerbate the risk of flooding to homeowners. Should FEMA base any NFIP minimum floodplain management standard changes on future risk and specifically on projections of climate change and associated impacts, such as sea level rise? What equity considerations should be factored into such decisions if climate change disproportionately harms underserved and vulnerable areas? What other considerations should be factored into an analysis involving climate change? Should the NFIP better distinguish NFIP minimum floodplain management standards between riverine and coastal communities? Should the NFIP minimum floodplain management standards incorporate pluvial (surface/ urban) flooding concerns? Are there specific measures and standards that should be taken to ensure structures can withstand the greater intensity, duration, frequency and geographic distribution of flooding events? If so, what are they and how can those measures and standards ensure structures and communities can readily adapt and increase resilience to the impacts of climate change?

Better distinguishing between riverine and coastal standards may provide benefit as the concerns are much different between these locations. State DOT's across the country are struggling with the best method to address climate change. A recently completed NCHRP research 15-61, "Applying Climate Change Information to Hydrologic and Hydraulic Design of Transportation Infrastructure" resulted in two follow up research projects: NCHRP 20-44, "Pilot Test of Climate Change Design Practices for Hydrology and Hydraulics", and NCHRP 15-61A, "Updates to the Design Practices Guide for Applying Climate Change Information to Hydrologic and Coastal Design of Transportation Infrastructure". Climate science regarding future flooding events is in a very immature state and is not well developed. Incorporation into the NFIP should not be considered until the science has stabilized and an acceptable design method is available to the DOTs.

(14) Are there technological advances, building standards, or standards of practice that could help FEMA to modify, streamline, or improve existing NFIP minimum floodplain management standards? If so, what are they and how can FEMA leverage those technologies and standards to achieve the agency's statutory and regulatory objectives?

- A. With the advent of more refined and available LiDAR data, more accurate and frequent updates to hydraulic models and FIRMs should be possible. Future hydraulic model updates should leverage the aforementioned LiDAR data in conjunction with 2D modeling to produce SFHA boundaries with more confidence of their accuracy.
- B. The availability of downloads of the latest FIRMs at the map center has been beneficial to all those managing the NFIP standards by giving them immediate access to that information. In that same regard, adding the ability to download other items such as the FIS and hydraulic analysis would enhance their oversight of development in the SFHA by reducing the cost and time of document and analysis procurement.
- C. A Memorandum of Understanding between FEMA and FHWA regarding hydraulic modelling within the SFHA would be beneficial to DOTs. Noteworthy items include the following:
 - i. Minor Culvert and Bridge Maintenance. An exemption waiver for culvert and bridge maintenance activities that results in a minor localized water surface water elevation rise that do not impact the flooding risk of adjacent properties.

- ii. Engineering Hydraulic Modelling Analysis Precision. The hydrologic analysis to determine the flow discharge used in the hydraulic model is not an exact science and it's not uncommon to have a large standard error of prediction for the base flood event. According to the 2019 USGS study, "Flood-Frequency Estimates for Ohio Streamgages Based on Data through Water Year 2015 and Techniques for Estimating Flood-Frequency Characteristics of Rural, Unregulated Ohio Streams" the standard error of prediction using the full regression equations is 39.6 % for the 100 year recurrence interval. This standard of error is not uncommon with the various hydrologic methods commonly used in hydraulic engineering. The 500 year recurrence interval yields a 40.27% standard error of prediction. Determining water surface elevations at a precision of 0.00 feet is not realistic.
- iii. No Rise Condition Definition. The definition of the No-Rise condition should be set at a realistic value given the high standard of error in hydrology predictions. It's noted that the cross sections shown in the FIS studies is shown to the nearest tenth of a foot.
- iv. Reduction in Upstream Water Surface Elevation. Hydraulic modelling resulting in a reduction in the upstream water surface elevation at a culvert or a bridge in a SFHA is subject to mapping revisions, resulting in time delays and increased cost to the project for taxpayers. A reduction in the upstream water surface elevation reduces the risk to upstream property due to culvert or bridge within the SFHA. An exemption waiver to perform mapping revisions for DOTs should be provided when a reduction in the water surface elevation is realized.
- v. Temporary Access Fills and Causeways. Temporary access fills and causeways should be granted a waiver provided they are entirely removed after the completion of work on a culvert or bridge. These are non-permanent structures constructed to allow work to be performed on a culvert or bridge.
- vi. Hydraulic models for SFHAs. Older hydraulic models often do not represent current conditions. This is especially true when SFHA models are 20+ years old. Streams often migrate horizontally or vertically due to natural processes, resulting in cross sections that look different than originally modelled. Additionally, the collection of survey data has drastically improved, representing a much more detailed surface model that will yield a more accurate hydraulic model. The process of creating a corrected effective model with tie-ins to the older model is flawed due to the differences between the new and old models.

A better analysis method would be to compare the current existing condition model created during the DOT hydraulic study against a proposed condition model to determine if a rise is expected. This analysis would use the most recent survey information to ensure it reflects current stream conditions. If there is a no-rise or negative rise condition, this should satisfy the requirements without additional flood map revisions. If a rise is encountered then further coordination, modelling, and map revisions would be warranted.

- vii. Two-Dimensional and Three-Dimensional Hydraulic Modelling. Advanced hydraulic engineering software using two-dimensional or three-dimensional analysis are becoming mainstream within the hydraulic modelling engineering community. These analysis methods create more realistic results with much higher precision as compared to one-dimensional modelling, which is the primary modelling method used and accepted by FEMA. A process to accept these advanced modelling methods by FEMA within SFHA where current 1-dimensional modelling exists needs to be developed. A recommended method could be use of the process outlined in bullet vi above.

Additionally, the advanced hydraulic modelling software can show a localized water surface water elevation rise that dissipates just beyond the bridge. These localized rises should be considered a no rise condition if it can be shown that these do not impact the flooding risk of adjacent properties.

(17) FEMA is developing a national programmatic framework for nationwide compliance with the ESA and is reexamining the extent to which NFIP actions may have adverse effects on T&E species and their habitats. Should FEMA reconsider its mapping practices, including the issuance of Letters of Map Revision based on Fill (LOMR-Fs)? Should the placement of fill material, defined as material used to raise a portion of a property to or above the Base Flood Elevation within the SFHA, be prohibited by NFIP minimum floodplain management standards? What would the impact of this change be on T&E species and NFIP participating communities?

The State of Ohio DOT believes that fill in the floodplain and the LOMR-F practice should remain a permitted activity. Prohibition of fill placement would exclude almost ALL development in the floodplain and potentially drive communities to abandon the NFIP. We question how this restriction would impact transportation facilities. Would all bridges be forced to span the entire SFHA floodplain instead of just the floodway? This would cause undue hardship on communities and government entities alike.